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ABSTRACT

A Spanish translation of the Wechsler Intelligence Scale for Children (WISC) was tested for reliability among kindergarten to ninth grade Puerto Rican children. The study was prompted by the concern expressed in previous studies that translated and adapted intelligence tests, which have been standardized primarily with children of one culture, do not account for cultural differences and therefore may not reflect the actual intellectual capacity of children of other cultures. From the test results, the researcher computed coefficients of reliability; item difficulty indices; item and subtest correlations; and mean scores for verbal intelligence, performance intelligence, and full intelligence. Findings of higher performance over verbal scores were similar to findings of previous studies. The mean intelligence quotient was 109.9. Comparatively, an earlier study, which also tried out the WISC translation among Puerto Ricans, yielded a mean score of 88.01, 12 points below the American mean. The results of the present study suggest that the WISC is appropriate for measuring intelligence among Puerto Rican children. (Author/MJL)

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A Reliability Study of the WISC with Puerto Rican Children (grades K-9) in Puerto Rico[1]

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Running head: Reliability Study

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A Reliability Study of the WISC with Puerto Rican Children (grades K-9) in Puerto Rico

Introduction

An increased concern on the part of parents, teachers, and community groups over labeling children for Special Education in Puerto Rico has focused attention on the testing practices. Dissatisfaction with testing has been expressed, and, as a result, recent federal legislation has called for psychological and academic testing appropriate to the cultural and linguistic background of the child (PL 94-142, 1975; Puerto Rico State Law 21, 1977). The problem school psychologists face is finding the best method to evaluate these children. The Wechsler Intelligence Scale for Children (WISC) (Wechsler, 1951, as translated by Roca, 1955) is currently used as the core in the assessment of children in Puerto Rico.

The interpretation of standardized measures of intelligence constructed in one language (English) and translated and administered in another language has become a rather confusing process (Irvine and Carroll, 1980). Brislin, Lonner, and Thorndike (1973), and Brislin (1980) suggest that tests standardized primarily with children of one culture hold questionable validity with children from another culture. Nowhere is this controversy more prevalent than with Puerto Rican children in Puerto Rico who may differ socially and culturally from children in the standardization group.

Dean (1980) indicates that behind the many objections against intelligence measures with the culturally diverse, lie the misconceptions of intelligence tests

and, in fact, the notion of intelligence itself. An examination of testing and assessment across cultures suggests that standardized tests are useful to the degree that they predict a specific criterion (Irvine and Carroll, 1980). The degree to which the criterion that one wishes to predict is based on favor of one culture, so must the test. Therefore, the validity of an intelligence measure such as the WISC may be judged on the prediction powers of the constructs it measures.

Tests which have been translated can yield results that do not reflect the actual capacity of the child. Sattler (1979) indicates that the nature of a test translation may affect test performance. Mercer (1977) suggests that simply translating the content of a test designed for a person socialized in one culture into the language of another culture does not eradicate the cultural differences inherent in the test. She also indicates that persons from backgrounds other than the culture in which the test was developed will always be penalized.

The WISC was translated to Spanish by a group of educators from the Division of Testing and Evaluation of the Department of Public Instruction of Puerto Rico (Roca, 1961). Moran (1974) indicates that the translation and adaptation of the WISC to Puerto Rico was a task with problems, many of which were only brought to light after frequent usage of the test on a wide and varied population. According to Roca (1961) it does not matter how well the WISC was adapted from one culture to another; there were cultural differences which made the children from the second culture score lower than those from the first.

Roca (1961) reported that studies involving the translation and adaptation of three intelligence tests for use in the schools of Puerto Rico indicate that, in general, the Puerto Rican children scored lower than American children.

The Spanish Version of the WISC

The WISC was translated in 1955 by a group of persons from the Department of Public Instruction of Puerto Rico. The WISC was validated with a total of 128 subjects in three different experiments (Roca, 1961). The first experiment tested children of six public schools in San Juan (the capital); the second used students of a middle-class socioeconomic status from three private schools, and the third experiment was conducted with subjects from fourth to sixth grades of a suburban school (Roca, 1961). Roca (1961) suggested that because the sampling represented in those experiments was inadequate, further research to validate the WISC should be undertaken, and that it should be revised accordingly.

According to Moran (1974) the distribution curve of IQ's on the Puerto Rican WISC was not a normal bell-shaped curve. The Puerto Rican mean IQ was 88.01, with a standard deviation of 21.6. The Puerto Rican mean WISC IQ scores therefore are 12 points lower than those for the mainland United States. The existing discrepancy between the norms of the Puerto Rican WISC and those of the original scale are a major concern. Although the validity and order of difficulty of each test item were evaluated, the distribution curve of IQ's on the Puerto Rican WISC was shifted approximately one standard deviation to the left of that obtained on the mainland.

The discrepancy between the Puerto Rican and American WISC IQ scores and their standard deviations (Mean Puerto Rican WISC IQ = 88, sd = 22; Mean American WISC IQ = 100, sd = 15) presents serious problems when interpreting Puerto Rican children's WISC IQ's, and in determining their subsequent classification. Moran (1974) suggests that corrections in the expressions of

language and difficulty of item sequence should be made in the Puerto Rican version of the WISC.

Moran (1974) also suggested that a revised Puerto Rican version of the WISC should be prepared. Moran encourages further use of the test and experimentation so that a more valid assessment of Puerto Rican children's general intellectual functioning is achieved.

Purpose of the Study

This study is an attempt to follow up the suggestions proposed by Roca (1961) and Moran (1974). The focus of the present study was to determine the performance of a group of Puerto Rican children in the WISC (Spanish version). This study will present baseline data for psychologists and psychometrists who are currently utilizing this instrument in Puerto Rico.

It was hypothesized that the subjects would achieve higher on the performance scales than on the verbal scales. Previous research (Kaufman, 1979) has shown that Puerto Rican children will score higher on a non-verbal than on a verbal task.

Method

Subjects. The sample used in this study consisted of 100 Puerto Rican pupils from the southern part of Puerto Rico in Kindergarten through ninth grade. Three elementary schools and three junior high schools participated. Ten (10) pupils from each grade (K-9) were selected at random. The total of 100 students was equally

divided between boys and girls. The pupils were ages 5 to 15. None of these children had ever been referred for Special Education Services by their teachers and were therefore considered to be of normal intellectual and learning ability for their age group.

Procedure. The WISC (Spanish version) was administered individually to each of the 100 students in the sample according to the standard directions of the WISC manual. Verbal, Performance, and Full Scale IQ were calculated for each pupil.

Results

This study formulates normative data for the WISC with a group of children in Puerto Rico in grades K through ninth. Table 1 reports the statistics for the WISC. Raw scores were used to report the data.

Insert Table 1 About Here

The KR-20 coefficient of reliability was .969. The lowest coefficient of reliability (KR-20 = .764) was found in the variable object assembly subtest. The comprehension subtest had a KR-20 of .776. The vocabulary subtest had a KR-20 of .885.

The level of item difficulty was also sought. Table 2 reports the results of the level of difficulty in the total WISC. It was found that 65 items had a difficulty index ranging from .00 to .19. A total of 29 items had a difficulty index ranging from .80 to 1.00.

Insert Table 2 About Here

Table 3 reports the distribution of test items. Three items yielded a negative correlation. Twenty-seven (27) items had point biserial correlation ranging from .6001 to 1.00. Ninety items had point biserial correlation ranging from .2001 to .6000.

Insert Table 3 About Here

An analysis of correlation was performed on the raw scores for ten subtests of the WISC. Table 4 presents the corrrelation coefficients. The highest relationship was found between the variable "picture arrangement" and the variable "block design" and the variable "coding" (r = .32).

Insert Table 4 About Here

The raw scores for the verbal intelligence quotient (VIQ), the performance intelligence quotient (PIQ), and the full intelligence quotient (FIQ) were obtained. Table 5 presents the statistics and correlation coefficients for the VIQ, PIQ, and the FIQ. Means of Verbal, Performance, and Full Scale scores were analyzed. The PIQ was higher than the VIQ. These findings seem to be similar to other studies (Anastasi and DeJesus, 1956; Kaufman, 1979; Oplesch and Genshaft, 1981). The average FIQ was 109.9. The highest correlation was between PIQ and FIQ (r = .72).

Insert Table 5 About Here

Discussion

In Puerto Rico the most widely used test is the WISC translated and standardized in 1955. According to Moran, the Puerto Rican mean WISC IQ scores were 12 points lower than those for the mainland. The Puerto Rican mean IQ obtained was 88.01 with a standard deviation of 21.6 (Wechsler, 1951; Roca, 1961). The present study obtained a mean IQ of 109.9 with a standard deviation of 14.56. The discrepancy suggests that the WISC is an appropriate instrument to measure the intelligence quotient of Puerto Rican children.

Currently an experimental version of the WISC-R in Spanish is in the process of development. It is suggested that this instrument be carefully normed with Puerto Rican children in Puerto Rico.

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Table 1

Statistics for the WISC
(n = 100)

Source	Infor.	Comp.	Arith.	Simil.	Vocab.	Pict.	Arrange.	Block	Objt.	Total
Number of Items	30	14	16	16	40	20	11	10	4	161
$\bar{X}$	8.90	4.16	7.96	7.12	9.55	11.05	6.30	4.61	2.13	61.78
Sd	3.78	2.53	3.039	3.083	5.565	3.667	2.54	2.213	1.301	22.373
K-R 20	.836	.776	.853	.844	.885	.851	.847	.815	.764	.969
Range	20	14	14	12	25	19	10	11	5	94
SS	9352	2374	7260	6020	12217	13555	4616	2615	623	431732

Table 2

Distribution of the Test Items
by Difficulty Index
(n = 100)

Difficulty Index	Number of Items
.00 - .19	65
.20 - .39	27
.40 - .59	21
.60 - .79	19
.80 - 1.00	29

Table 3

Distribution of the Test Items
by Point Biserials (with them
Exclusion Adjustment)
(n = 100)

Correlations	Number of Items
Negative	3
.0001 - .2000	41
.2001 - .4000	48
.4001 - .6000	42
.6001 - 1.000	27

Table 4

Table for Correlation Coefficients for the Subtest of the WISC
(n = 100)

Source	1	2	3	4	5	6	7	8	9	10
1. Info	1.00									
2. Comp	.6624									
3. Arith	.7633	.5663								
4. Similar	.6904	.5346	.7550							
5. Verbal	.6529	.5052	.5641	.5924						
6. Picture Completion	.6837	.5592	.6228	.5222	.4882					
7. Picture Arrangement	.7680	.6559	.7712	.7273	.4984	.6963				
8. Block Design	.6045	.5241	.6250	.4465	.3836	.5791	.6994			
9. Object Assembly	.6690	.5148	.6107	.5470	.5053	.5037	.6257	.5975		
10. Code	.5370	.3846	.5545	.5532	.3900	.4283	.5663	.3162	.3459	
11. Total	.8331	.6606	.8155	.7835	.6809	.7058	.8249	.6014	.6257	.8596

Table 5

Means, Standard Deviation and Correlation Coefficient for VIQ, PIQ, and FIQ (n = 100)

Source	$\bar{X}$	Sd
VIQ	90.20	8.203
PIQ	111.80	12.853
FIQ	109.93	14.561

	VIQ	PIQ
PIQ	.6400	
FIQ	.5455	.7227